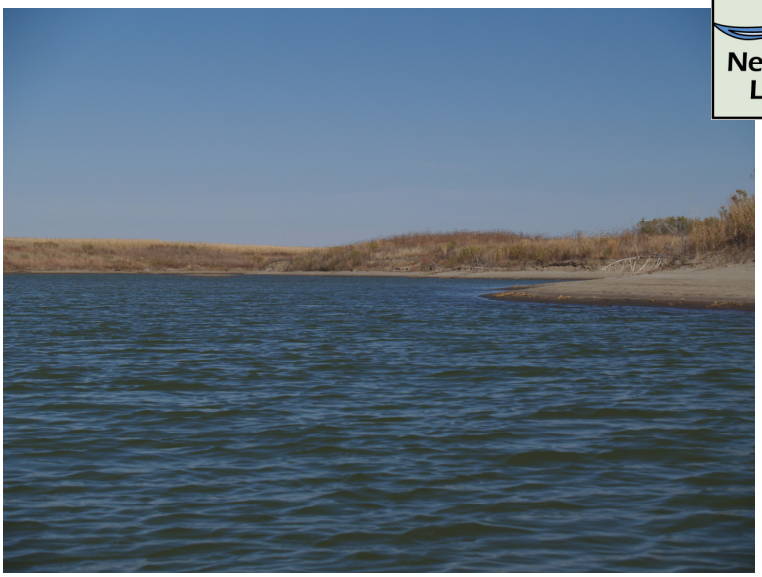
Missouri River landscape



includes the Missouri River channel, floodplain, and bluffs from the Nebraska/Kansas border to the Nebraska/South Dakota border. The Missouri River drains approximately 529,350 square miles of land, including the entire state of Nebraska. Historically, the Missouri was one of the most dynamic large rivers in North America. Natural runoff events (floods) in March- June were instrumental in creating the river's constantly meandering course. The River was more than a mile wide and 20 feet deep in places, and its channel laced with sandbars and forested islands. The river's floodplain was a mosaic of oxbow lakes, backwater marshes, wet prairies and floodplain forests.

Alteration of the Missouri River began in 1829 when the removal of tree snags was initiated to improve steamboat navigation. Between the 1930's and 1960's, a bank stabilization project armored the banks and created a navigational channel between St. Louis, Missouri and Sioux City, Iowa. Between 1940 and 1964, six mainstream dams were constructed, which resulted in managed flows.

From an ecological perspective, these attempts to "tame the river" have had many negative consequences for riverine flora and fauna. Sediment transport has been interrupted, resulting in increased sedimentation above Gavins Point Dam and degradation of the streambed and draining of floodplain wetlands below the dam. Channelization has resulted in the elimination of sloughs, backwaters and oxbows. Many riverine species depend upon spring flood pulses as spawning cues and upon the availability of floodplain habitat for many of their life requisites. Alteration of natural flows and elimination of lateral riverine movement has resulted in declining populations of many big river species. There are nine state-listed species and five federally-listed species that occur within the Nebraska portion of the Missouri River corridor. The lack of properly-timed flows has also impacted the hydrology of the floodplain wetlands. The majority of the floodplain is now in cropland.

The stretches of the Missouri River from Sioux City to Gavins Point Dam and from the upper end of Lewis and Clark Lake to the South Dakota border have remained un-channelized and are designated as a National Recreational River.

Although these reaches remain un-channelized, regulated flows have altered many natural riverine processes (e.g., sediment transport, annual flooding).

Federal mitigation dollars have helped fund several chute and channel restoration projects on the Missouri River in recent years, such as the Hamburg Bend, Kansas Bend, Langdon Bend, Decatur Bend and Tobacco Bend projects. In addition, Wetland Reserve Program dollars have become available for the restoration of Missouri River floodplain wetlands and associated habitats. The U.S. Army Corps of Engineers has worked to create new sand islands for least tern and piping plover nesting. A backwater area called Mulberry Bend was enhanced by removal of sediment for island creation. South Dakota Game, Fish and Parks (SDGFP) recently completed an evaluation of impacts to native fishes in this aquatic habitat. Protected areas in the BUL include Niobrara, Ponca, and Indian Cave State Parks, Boyer Chute National Wildlife Refuge, and a number of wildlife management areas.

Natural Legacy Demonstration Site

Boyer Chute National Wildlife Refuge - U.S. Fish and Wildlife Service
This Refuge was established to recover fish and wildlife habitat in the Missouri River and its floodplain. Refuge floodplains have been restored to near pre-channelization condition without affecting navigation on the main stem of the Missouri River. Boyer Chute is once again an ecologically functioning part of the river. Close to 3,350 acres of floodplain woodland, tall-grass prairie, and wetland habitats now benefit Missouri River fishes, migratory birds, endangered species, and resident wildlife.

Stresses Affecting Species and Habitats

- Invasive plants and animals, including phrgmites, reed canary grass, purple loosestrife, zebra mussels and exotic fish
- Altered natural flows will continue to threaten at-risk aquatic species, as well as some terrestrial species whose life-histories are closely linked to the availability of riverine habitat
- Channel down-cutting from lack of sediment, restricted channel, and constructed jetties.
- Wetland drainage and conversion
- Development pressure in riparian zones
- Deer over-browsing in riparian woodlands
- Chemicals in the water that work as endocrine disrupters in fish species

Conservation Strategies

- Seek to alter river flow management to conform to more natural flows
- Encourage levee setbacks and a functional connected floodplain according to the Galloway Plan (IFMRC 1994) and the National Research Council Report (2002)
- Restore river meandering where possible, restore meandering in off-channel chutes especially, reduce navigation channel where possible
- Restore sediment availability for river reaches downstream of Fort Randall Dam. Develop an erodible corridor for sediment input.
- Restore coarse particulate organic matter and large woody debris in the river
- Increase top width of the channelized reach in order to establish shallow water habitat diversity for fish and wildlife purposes
- Uphold wetland conservation provisions (e.g., Swampbuster) and studies that evaluate the abilities of aquatic wildlife to pass through dams
- Restore natural plant communities (e.g., wetlands, prairies, and woodlands) on the river floodplain and terraces
- Conduct education programs on invasive aquatic species identification, prevention and inadvertent transfer.
- Establish zoning setbacks and possible land purchases to reduce fragmentation of riparian habitat
- Improve access to and harvest of deer
- Use integrated pest management and nutrient management to reduce pollution run-off into tributaries

Collaborative Conservation Opportunities across State Borders

Coordinate with South Dakota, Iowa, and Missouri conservation agencies and tribes, particularly efforts to benefit riverine species of the Missouri River in greatest conservation need (identified in multiple state wildlife action plans). Nebraska at-risk species identified also in the South Dakota wildlife action plan include river otter, bald eagle, interior least tern, piping plover, pallid sturgeon, sicklefin chub, sturgeon chub, Higgins eye, and scaleshell. Nebraska at-risk species identified also in the Iowa wildlife action plan include river otter, southern flying squirrel, bald eagle, bell's vireo, cerulean warbler, interior least tern, king rail, piping plover, timber rattlesnake, blue sucker, lake sturgeon, pallid sturgeon, and sicklefin chub. And, species identified also in the Missouri strategy include Bell's vireo, cerulean warbler, king rail, timber rattlesnake, blue sucker, pallid sturgeon, and sturgeon chub. Species lists may be modified as new information becomes available. Innovative methods for sufficient information exchange could aid the collaborative process.

Coordinated habitat management actions (e.g., strategic grazing) should mirror medium to high priority conservation goals as identified in the South Dakota Comprehensive Wildlife Conservation Plan, priorities for conservation actions in

the Iowa Wildlife Action Plan, and/or actions in the Missouri Comprehensive Wildlife Strategy. Collaborative conservation efforts across state borders should include researchers, federal and non-profit environmental program coordinators, and landowners, particularly those with properties extending over state lines. For example, conservation efforts coordinated by Missouri River Futures involve multi-state partners to address current issues regarding the Missouri River. South Dakota Game, Fish and Parks, Nebraska Game and Parks Commission, Iowa Department of Natural Resources, and the South Dakota, Iowa, and Nebraska Divisions of the Izaak Walton League of America (IWLA) formed the Tri-state IWLA Missouri River Initiative to work towards stated goals. Additionally, USDA prorams may have goals in common with Natural Legacy. NRCS Conservation Innovation Grants are already contributing to multi-state conservation efforts regarding various issues.

Tier I At-risk Species

Plants:
American Ginseng[4]
Nodding-pogonia[2]

Animals:
River Otter
Southern Flying Squirrel[3]
Bell's Vireo
Cerulean Warbler[4]
Interior Least Tern
Piping Plover
Timber Rattlesnake
Blue Sucker[2]
Lake Sturgeon[3]
Pallid Sturgeon[3]
Sicklefin Chub[1]
Sturgeon Chub[2]
Flat Floater[1]
Higgins Eye[1]
Pistolgrip[2]
Scaleshell[1]
Regal Fritillary
Mottled Duskywing[4]
Married Underwing
Whitney Underwing

Aquatic Communities:
Large, Warm Water River*

Terrestrial Communities:
Eastern Riparian Forest
Cottonwood-Peachleaf Willow Riparian Woodland*
Eastern Cottonwood-Dogwood Riparian Woodland*
Cottonwood-Diamond Willow Woodland
Red Oak-Basswood-Ironwood Forest
Oak-Hickory-Ironwood Forest
Bur Oak-Basswood-Ironwood Forest
Mesic Bur Oak Forest and Woodland
Dry-Mesic Bur Oak Forest and Woodland
Dry Upland Bur Oak Woodland
Sandbar Willow Shrubland*
Riparian Dogwood-False Indigobush Shrubland*
Buffaloberry Shrubland
Freshwater Seep
Eastern Cordgrass Wet Prairie*
Eastern Sedge Wet Meadow*
Eastern Bulrush Deep Marsh*
Cattail Shallow Marsh*
Reed Marsh*
Eastern Pondweed Aquatic Wetland*
American Lotus Aquatic Wetland*
Upland Tall-grass Prairie
Lowland Tall-grass Prairie
Missouri River Valley Dune Grassland*
Missouri River Floodplain Terrace Grassland*
Northern Loess/Shale Bluff Prairie*
Perennial Sandbar
Sandbar/Mudflat*
Eastern Sandstone Bluff and Cliff
Northern Chalk Bluff and Cliff

* Priority for conservation in this BUL
[1] This is the only BUL where the species is known to occur
[2] Known to occur in only one other BUL
[3] Known to occur in only two other BULs
[4] Known to occur in only three other BULs